

Replaced by
Art 34 Amdt

Claims

1. A device for adjusting the valve lift of valves (1) of a combustion engine, the
5 device comprising a lever (3) driven by a cam shaft (4), said lever having at
least two arms, wherein at least one arm moves on a bearing (5), said lever (3)
is pushed against the cam shaft (4) by a biasing means (12) and positioned by
at least one positioning means (6) and cooperates with a valve engagement
means (2) that cooperates with at least one valve of the combustion engine.
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2. A device according to claim 1 wherein the lever (3) is a rocker lever.
3. A device according to either one of claim 1 or 2, wherein the lever (3) com-
prises at least one roller (9) which rolls over the bearing (5).
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4. A device according to any one of the preceding claims wherein the bearing (5)
is attached to or is a part of the engine.
5. A device according to any one of the preceding claims, wherein the lever (3)
20 is moved by the action of the cam shaft (4) on the roller (9).
6. A device according to any one of the preceding claims, wherein the lever (3)
moves around the positioning means (6).
- 25 7. A device according to any one of the preceding claims, wherein the lever (3)
comprises a further roller (11) which rolls over a further bearing (7), wherein
said bearing is a part of the valve engaging means (2).
8. A device according to any one of the preceding claims, wherein the lever (3)
30 comprises a roller (10) which cooperates with the positioning means (6) and

wherein the lever (3) moves around the positioning means (6) via said roller (10).

9. A device according to any one of claims 1 to 7, wherein the positioning means
5 (6) cooperates with a rigid contour (10) of the lever (3) and wherein the lever (3) moves around the positioning means (6) via said rigid contour (10).
10. A device according to any one of the proceeding claims, wherein the device
comprises at least two levers (3a, 3b), each of which comprising a first roller
10 (9a, 9b) each rolling in a bearing (5a, 5b), whereby said levers (3a, 3b) are positioned by a positioning means cooperating with the pivots of the levers (3a, 3b), wherein each of the levers (3a, 3b) acts on the valve engaging means by cooperation of a second roller with a working curve, and wherein the first rollers (9a, 9b) of the levers (3a, 3b) rest on an axis (15) and are driven by a cam
15 shaft (4), and wherein the levers (3a, 3b) can be positioned independently to each other by the positioning means.
11. A device according to claim 10, wherein the two first rollers (9a, 9b) comprise
a first roller area, being located at one end of the levers (3a, 3b) and a second
20 common roller area (14) being located between the levers (3a, 3b) on the common axis (15).
12. A device according to either one of claim 10 or 11, wherein the levers (3a, 3b)
are driven by a common cam of the cam shaft (4), said common cam cooperating
25 with the common second roller area (14).
13. A device according to any one of claims 10 to 12, wherein the common second
roller area (14) cooperates with the path (13) defined by the bearings (5a, 5b) said bearings being attached to or being part of the engine, and wherein
30 the two first roller areas (9a, 9b) cooperate with the cam shaft (4).

14. A device according to any one of claims 1 to 6, wherein the lever (3) comprises a further roller (10) which moves around a positioning means (6) and wherein the lever (3) comprises a working curve (20) that cooperates with the valve engagement means (2).

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15. A device according to claim 14, wherein the valve engagement means (2) is a roller lever, with whose roller (21) the lever (3) cooperates via its working curve (20).

10 16. A device according to claim 15, wherein the path (13) defined by the bearing (5) is curved and the curvature is determined by a circular arc around the center point of the roller (21) of the roller lever (2).

15 17. A device according to claim 16, wherein the bearing (5) and the contour (19) of the positioning means (6) comprise plane surfaces.

18. A device according to claim 16, wherein the plane surfaces of the bearing (5) and the contour (19) are aligned perpendicularly to each other.

20 19. A device according to any one of claims 14 to 18 for adjusting the valve lift of at least two valves, wherein the device comprises at least two levers (3a, 3b) according to claim 14, which rest on a common axis (15) and which can be positioned by a positioning means such that the valves can carry out strokes which differ from each other.

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20. A combustion engine comprising a device according to any one of the preceding claims.

30 21. A lever suitable for the valve lift adjustment device for combustion engines according to any one of the preceding claims 1 to 19, the lever having at least two arms one of which comprises a means for bearing the lever rotatably in a

bearing that is attached to or part of the engine, the lever further comprises a means for cooperating with a camshaft driving the lever said lever further comprises a means for cooperating with a positioning means displacing the lever, the lever further comprising a means for cooperating with at least one
5 valve engagement means that moves at least one valve of the engine.

22. A method for adjusting the valve lift of valves (1) characterized in that for the adjustment of the valve lift, rocker levers (3, 3a, 3b) are operated, which are positioned by positioning means (6), and which are driven in a path (13) by a
10 cam shaft (4).

23. A method according to claim 22 characterized in that the rocker lever (3, 3a, 3b) rolls with a roller (9, 9a, 9b) over the path (13) and at the same time moves via a roller (10) pivoted at the lever, or instead of the roller (10), via a
15 rigid contour of the lever around the contour of the positioning means (6).

24. Method according to either one of claim 22 or 23, characterized in that a further roller (11) rolls over a further bearing (7).

20 25. A method according to any one of claims 22 to 24, characterized in that by carrying out a variable valve lift adjustment for two valves (1a, 1b), the two external rollers (9a, 9b) of the two levers (3a, 3b), being linked via a common axis (15) and having a common roller (14), roll in two bearings (5a, 5b) and wherein the common roller (14) is driven by a cam of the cam shaft (4).

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26. A method according to claim 25, characterized in that the common roller (14) rolls in a bearing (5) and the external rollers (9a, 9b) are driven by the cam shaft (4).

27. A method according to any one of claims 22 to 26, wherein with an arrangement of two rocker levers (3a, 3b) provided on a common axis (15), the strokes of the valves can be adjusted differently from each other.
- 5 28. A method according to any one of claims 22 to 27, characterized in that for the adjustment of the valve lift, the positioning means (6) is positioned in a guidance corresponding to a desired torsional moment.
- 10 29. A method according to any one of claims 22 to 28, characterized in that by way of the positioning the positioning means (6) the pivot of the rocker lever (3) and the area of the bearing (7) in which the roller (11) rolls is determined.
- 15 30. A method according to any one of claims 22 to 29, characterized in that the rocker lever (3) moves during one revolution of the cam shaft (4) along a path that is determined by the bearing (5).